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## **New frontiers and conceptual frameworks for energy justice**

Benjamin K. Sovacool<sup>1,2</sup>, Matthew Burke<sup>3</sup>, Lucy Baker<sup>2</sup>, Chaitanya Kumar Kotikalapudi,<sup>2</sup> and Holle Wlokas<sup>4</sup>

<sup>1</sup> Department of Business Development and Technology, Aarhus University, Birk Centerpark 15, DK-7400 Herning, Denmark

<sup>2</sup> Science Policy Research Unit (SPRU), School of Business, Management, and Economics, University of Sussex, United Kingdom

<sup>3</sup> Department of Natural Resource Sciences, McGill University  
2111 Lakeshore Road, Ste. Anne de Bellevue, QC H9X 3V9 Canada

<sup>4</sup> Energy Research Centre, University of Cape Town, South Africa

**Abstract:** This article explores how concepts from justice and ethics can inform energy decision-making and highlight the moral and equity dimensions of energy production and use. It defines “energy justice” as a global energy system that fairly distributes both the benefits and burdens of energy services, and one that contributes to more representative and inclusive energy decision-making. The primary contribution of the article is its focus on six new frontiers of future energy justice research. First is making the case for the involvement of non-Western justice theorists. Second is expanding beyond humans to look at the Rights of Nature or non-anthropocentric notions of justice. Third is focusing on cross-scalar issues of justice such as embodied emissions. Fourth is identifying business models and the co-benefits of justice. Fifth is better understanding the tradeoffs within energy justice principles. Sixth is exposing unjust discourses. In doing so, the article presents an agenda constituted by 30 research questions as well as an amended conceptual framework consisting of ten principles. The article argues in favor of “justice-aware” energy planning and policymaking, and it hopes that its (reconsidered) energy justice conceptual framework offers a critical tool to inform decision-making.

**Keywords:** energy justice; environmental justice; climate justice; energy and ethics

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## 1. Introduction

Many features of energy production and use have significant impacts on fairness and justice (Jones et al. 2015). For instance, the costs of climate change will disproportionately befall the weakest and least developed countries as well as the poorest in developed nations while any benefits, if there are any, will likely accrue to the rich and powerful (Smith et al. 2013). Wilkinson et al. (2007) note that some serious environmental and social burdens result from having too much energy – from waste, over-consumption, and pollution. Others, however, result from not having enough energy – from lack of access to modern forms of energy services, under-consumption, and poverty. And yet many consumers of energy and even planners and policymakers confront and frame such climate and energy risks within a moral vacuum. Markowitz and Shariff (2012) argue that our moral systems are ill equipped to handle the complexity and expansiveness of modern day energy and climate problems. Stoknes (2014) found that individuals will work to avoid feelings of responsibility for climate change or energy consumption; some will even have optimistic biases, downgrading any negative information they receive and counterbalancing it with almost irrational exuberance.

Clearly, we need new ways of thinking about, and approaching, the world's energy dilemmas. The concept of energy justice has therefore been defined as a global energy system that fairly disseminates both the benefits and costs of energy services, and one that has representative and impartial energy decision-making (Sovacool and Dworkin 2014; Sovacool 2013). In very simple terms: it attempts to apply principles and concepts from social justice to the global energy system in its broadest sense. The conceptual framework of energy justice therefore involves burdens, or how the hazards, costs and externalities of the energy system are disseminated throughout society; benefits, or how access to modern energy systems and services is distributed throughout society; procedures or ensuring that energy decision-making respects due process and representation; and recognition, that the

marginalized or vulnerable have special consideration (Jenkins et al. 2016a). Sovacool and Dworkin (2015) posit that energy justice can be a *conceptual tool* for that better integrates usually distinct distributive, procedural, cosmopolitan, and recognition justice concerns. It can be an *analytical tool* for energy researchers striving to understand how values get built or marginalized into energy systems or to resolve common energy problems. It can lastly offer a *decision-making tool* that can assist energy planners and consumers in making more informed energy choices.

Although we maintain that this work has great merit, some notable shortcomings do exist. Western theorists and anthropocentric concepts have tended to dominate the discourse on jurisprudence, particularly in contemporary settings, and especially related to energy justice. When Sovacool and Dworkin (2014) discussed the philosophical underpinnings of “global energy justice,” they relied almost exclusively on Western philosophers such as Jeremy Bentham, Immanuel Kant, John Rawls, and Robert Nozick shown in Table 1. Similarly, the justice as recognition dimensions articulated by Walker (2012) and Jenkins et al. (2016a) draw heavily from the work of Nany Fraser, an American feminist and critical theorist whose work examines “participatory parity” for vulnerable groups. Energy justice concepts also have a strong anthropocentric bias, perhaps understandable given that modern energy systems have been built to serve the needs of humans. Thus the field of energy justice has overwhelmingly been defined by concerns with ethics and morality among and between humans. This human-centered or anthropocentric perspective is expressed explicitly in energy justice scholarships as justice among “the social” (Hall, Hards, & Bulkeley, 2013, p. 417) and members of society (McCauley, Heffron, Stephan, & Jenkins, 2013), fairness among people and communities (Sovacool and Dworkin 2015), and awareness of human needs (Jenkins et al. 2016b). An anthropocentric focus is also implicit to significant themes within the field that commonly fail to consider nonhumans when it discusses the interests of marginalized groups, promotion of welfare,

relations between producers and consumers, participation of stakeholders, intergenerational impacts, and forms of distributive, procedural and recognition justice. As but one illustrative example of this anthropocentric bias, McCauley et al. (2013: 2-3) call for a distributional justice that would include “the distribution of benefits and ills on all members of society regardless of income, race, etc.”, and a recognition justice that would “recognize the divergent perspectives rooted in social, cultural, ethnic, racial and gender differences”.

**Table 1: Philosophical Concepts and Influences for Global Energy Justice**

Topic	Concept(s)	Major philosophical influence(s)
Energy Efficiency	Virtue	Plato and Aristotle
Energy Externalities	Utility	Jeremy Bentham, John Stuart Mill, Henry Sidgwick
Human Rights and Social Conflict	Human rights	Immanuel Kant
Energy and Due Process	Procedural justice	Edward Coke, Thomas Jefferson, Jürgen Habermas
Energy Poverty	Welfare and happiness	John Rawls, Amartya Sen, Martha Nussbaum
Energy Subsidies	Freedom	Robert Nozick, Milton Friedman
Energy Resources	Posterity	Ronald Dworkin, Brian Barry, Edith Brown Weiss
Climate Change	Fairness, responsibility, and capacity	Peter Singer, Henry Shue, Paul Baer, Stephen M. Gardiner, Dale Jamieson, Simon Caney

Energy justice, therefore, has some imperfections. Left unexamined is whether or how models of justice could tap into the rich insights offered by non-Western justice theorists, and also allow for an extended membership regardless of species and recognize perspectives rooted in nonhuman differences as well. To explore this theme, in this article we argue that energy justice does give us a way to better assess and resolve energy and climate related conundrums, but that new conceptions and research

question need brought into the fold. The core of the article focuses on six new frontiers—fruitful areas of future research—divided into the categories of strengthening energy justice theory and revealing opportunities and tensions for energy justice in practice. It also presents a research agenda populated by 30 research questions raised throughout the article. These questions are meant to be illustrative rather than exhaustive, and they are intended to facilitate and open up discussion rather than close it down. In laying out a series of questions rather than offering predetermined or definitive answers, the article is meant to both be ponderously self-reflective (the authors don't believe they *have* all of the answers) and to spur the research community towards promising areas of inquiry. In short: we need justice-aware energy policy and research, meaning energy policies and research agendas that explicitly engage with our new frontiers and consider a set of reformulated energy justice principles.

## 2. Proposing Six Energy Justice Research Frontiers

Although the field of energy justice is indeed dynamic and rapidly evolving, more can be done to advance justice-aware energy policy. We maintain that at least six fields of inquiry are deserving of more attention: new theoretical approaches from beyond classical Western theorists, moral consideration of the non-human world, embodied emissions and the spatial or scalar implications of justice, business models and co-benefits for justice, tradeoffs and tensions within and across justice principles, and utopianism and discursive discontinuity. These fields of inquiry fall roughly into two categories: strengthening energy justice theory, and opportunities and tensions for energy justice in practice.

### *2.1 Strengthening energy justice theory*

Non-Western or non-human-centered notions of ethics and justice present challenges for engaging with the existing energy justice scholarship (Cline, 2014; Murphy & Weber, 2016). The only

exception to our mind is Guruswamy (2016), who briefly explored the jurisprudential lineages of justice within Western, Islamic, Buddhist and Confucian traditions, but limited itself to legal aspects. Given the rich, ancient and diverse traditions of non-Western ethics, as well as the complexities of translation and comparison, this section necessarily offers only a minimal introduction as a step towards a much deeper engagement of non-Western and non-human-centered theories of ethics and justice with energy policy and decision making.

### **2.1.1 Non-western theorists**

#### *Ubuntu of Africa South of the Sahara*

Common to the people of Africa south of the Sahara, *Ubuntu* signifies a relational culture and worldview that values human dignity as realized through communal relationships in the context of social harmony (Metz, 2011). Humans are viewed as a part of society, which in turn exists within the biosphere and the cosmos, implying responsibility to others and care for the integrity of the natural world (Chuwa, 2014). The ultimate moral obligation is to achieve complete personhood and obtain Ubuntu by increasingly entering into community with others, meaning that personal maturity and humanity is measured by the quality of one's relationship to other human beings (Metz, 2011; Chuwa, 2014). While upholding basic human rights, Ubuntu is understood as communitarian because of its "other-oriented" worldview as expressed by the phrase *cognatus sum, ergo sumus* (I am known, therefore we are) or through the maxim "a person is a person through other persons" (Chuwa, 2014). The interdependent community and the individual members survive and flourish together, with the implication that "actions are wrong not merely insofar as they harm people (utilitarianism) or degrade an individual's autonomy (Kantianism), but rather just to the extent that they... fail to respect friendship or the capacity for it" (Metz, 2011). Interdependence additionally underscores the argument for extending moral status to non-human beings to the degree that humans relate with particular

nonhuman members of the biosphere. With the core value of communitarianism, Ubuntu views justice as an element of care for and responsibility to the other. The achievement of societal common good and maximization of quantity and quality of human life validate Ubuntu (Chuwa, 2014).

### *Confucianism and Taoism of China*

Confucius (551–479 BCE), known today in China and throughout East Asia as Kongzi, primarily authored the *Analects*, a key source of classical Confucian thought and ethics (Cline, 2009). Cline (2009, 2014) describes Confucianism as a virtue ethics with a strong focus on the good of social groups as well as the self-cultivation of individuals. Like Taoism, also of Chinese origin, a primary concern of Confucianism stems from the concept of *dao* or *Tao*, meaning “the Way”, and its relation to *de*, or virtue (Cline, 2009). The Way includes both the right way of doing things and the good that this achieves, combining both right action and good outcome, yet the *junzi* or cultivated human, as well as the benevolent state (Cheng, 1997; Angle, 2012), focuses first on taking action in the right way rather than achieving certain ends in the short term (Cline, 2009). Confucians view “the development and expression of complete forms of a full range of virtues as the best overall outcome” (Cline, 2009, p. 115). Thus, an action is right if it expresses the virtues and develops human character (Cline, 2009). Moral progress thus involves the development and realization of virtues such as humaneness, righteousness, propriety, wisdom, and faithfulness (Angle, 2012) and a sense of justice (Cline, 2014). Confucian justice is commonly described as both *yi*, translated as rightness, righteousness or appropriateness, and *ren*, translated as humaneness, co-humanity or benevolence (Cheng, 1997; Murphy & Weber, 2016). Although justice is not an end in itself, a well-developed sense of justice among the human family “contributes to the achievement of the larger goals of a humane and harmonious society” (Cline, 2014, p. 173). Confucian justice requires doing no harm to others as well



as helping others achieve virtue (Cheng, 1997), particularly the most disadvantaged of society (Qiyong, 2013).

Decidedly less anthropocentric, Lao Tzu (605-531 BCE) characterized the notion of Tao as the nameless essential reality of an infinite and impersonal nature (Ip, 1983). Everything in the universe results from mutual transformations governed by the complementary polarities and rhythmic processes of Yin and Yang (Ip, 1983). The Taoist view holds no special status for humans, aspiring rather to eliminate dualistic illusions of human and nature, self and other, actor and action (Loy, 1997). Taoism suggests letting things be, based on the notion of *wu wei*, often translated as effortless action. Also thus less intentional, right action is thought to arise spontaneously from those who realize Tao (Loy, 1997). A core Taoist critique targets the human preoccupation with improving, organizing, controlling and developing the world, which reduces our ability to spontaneously and creatively engage true nature through *wu wei* and ironically creates more disorder (Loy, 1997).

#### *Hinduism, Buddhism, and Dharma in the Indian Subcontinent*

The concept of *Dharma* or the Hindu law originated in the Indian subcontinent. Considered one of the oldest traditions of legal theory (dating between 1500 and 600 BCE), its sophisticated roots and imaginations could place it as a third alternative to the predominant approaches of legal positivism and natural law theories, yet simultaneously constituted by the two (Singh 1985). *Dharma*, defined crudely as a duty or obligation of righteousness is derived from the ancient treatise called the *Dharmashastras* and is built on notions of cosmic or beyond-human laws called *Rta*, which are intended to sustain order and peace within the universe. Unlike natural laws that reject scepticism, *Dharma* renders itself to social realities and is therefore necessarily open to interpretation. Such an analysis has allowed scholars to view Hindu law from the perspective of legal realism. (Davis 2006) offers a broadly sequential set of steps to be followed under *Dharma*:

*The result for judicial decisions is the consideration of the “total history” of the case. Hindu jurisprudence 1. Puts the facts of a case first, though legal rules are set forth and respected, 2. Demands consideration of psycho-social facts of the participants in the legal process, while asserting a uniform basis in shared education, discipline, and reason, 3. Eschews formalism, though a formal procedure is described and 4. Encourages reliance on localized standards, even as these are held to be imbued with the spirit of the Dharmashastras.*

The next logical step is the notion of *danda* (punishment or a deterrent), determined by the scale and situation of the transgressions from *Dharma*. “The value of a judicial decision would be appraised less from its approximation to abstract justice than from its aptness to please (or displease) both parties, to compromise their conflicting claims, and to prevent their reopening of legal decisions is a hallmark of Hindu law, meaning that dharma is continually re-determined in every separate instance or case” (Derrett 1968).

*Dharma* guides the participants towards a path that sustains order, longevity and collective well-being (Halbfass 1988). These values are broad but offer directions for judiciary authorities or policy makers to consistently hold as central to their decisions. (Dhavan, 1992) has shown in his work how India continues to negotiate *Dharma* with the legal legacy of the British Empire and (Iyer 1985) calls for a renewed focus for the judiciary on social justice, based on India’s indigenous knowledge. (Baxi, 1990) has expounded the need for a new form of jurisprudence based on human solidarity rather than a jurisprudence of abstraction.

Buddhism is another major religion from Asia that has clear influences of *Dharma*. The central tenet of Buddhism is the advancement of the individual human soul to attain enlightenment or nirvana (a microcosmic sense of order as opposed to the macrocosmic outlook of the Dharmashastra) by leading a life devoid of ego and selfishness. The particular focus on the individual renders Buddhism to

the critique of its inability to deal with matters of social justice, global politics or even mundane social activities (King, 1989). Some have drawn similarities between Buddhist principles of selflessness and Rawlsian theory of justice. Rawl's concept of the *veil of ignorance* postulates that in order to be fair, one has to be able to suspend one's position in society and remain unconstrained by the "arbitrary contingencies or the relative balance of social forces" (Rawls, 1971). Cho (2000) suggests that this possibility that 'I can be anybody in the community' offers a parallel to Buddhism's concept of interpenetration or the idea that 'I am everybody in the community'. The concept of selflessness may therefore serve as a "theoretical doorway from the ontological concerns of Buddhism to the phenomenal world of social interactions". Other Buddhist and Hindu concepts like *Karma* or causality and mindfulness or heightened self-awareness hold value beyond their application to the individual self and offer normative guidance for moral and ethical behaviour.

The life of Mahatma Gandhi offers an important example of *Dharma* in practice. Influenced and derived from the Vedic texts, Gandhi's pursuit of the 'eternal truth' allowed him to introduce the concepts of *Ahimsa* (non-violence), *Swaraj* (Self-rule), *Swadeshi* (indigenous or self-sufficient), resource trusteeship and *Satyagraha* (truth force/civil disobedience). They offer clear, practical pathways for decision makers to adopt *dharmic* principles. The concept of *Swaraj*, detailed in his 1913 book *Hind Swaraj*, is a call for building agency in the individual to govern their own lives. Parliamentary democracy is an intermediate step towards ultimately realizing the fullest potential of the individual. In our current political circumstances, distributed or localized, democratic governance models alone, can further *Swaraj*. The concept of self-sufficiency or living within certain limits has proven to be prophetic in the current context of climate change and ecological destruction. Gandhi believed in inculcating a balance between the spiritual and material needs of our lives.

The concept of trusteeship urges those who have the capabilities for wealth accumulation to not consume beyond their needs and put the remainder of their wealth to social good. Modern day philanthropy might claim to eschew these ideals but rising inequality belies such a claim or limits it to a few individuals. Indian history, particularly through the Bhoodan and Gramadan Movements, offers examples of voluntary renouncement of land and villages for the economic betterment of the masses. Finally, the most significant application of Dharma lies in the concept of civil disobedience, which has gained global prominence through its application across various struggles like the civil rights, human rights and quite recently, for ecological rights (Lemons & Brown, 2011). *Ahimsa* is described as the greatest of all duties or *Dharma* and civil disobedience should therefore be driven by non-violence. Gandhi pursued a more radical approach of self-suffering and all-embracing love as the only way to overcome an unjust system.

#### *Indigenous Perspectives of the Americas*

Indigenous peoples and some nations in the Americas and around the world are increasingly on the frontlines of efforts to prevent fossil fuel development. Their opposition stems not only from a concern for land and livelihood, but also from a fundamental critique of Western ways of living, viewed as lacking an appreciation of human duties and responsibilities to the natural world (Manno & Martin, 2015). This neglect is represented strikingly through the exploitation of the Americans (North, Central, and South) and the associated destruction of Indigenous peoples and nations by European settler societies in the pursuit of energy resources (Manno & Martin, 2015). Here we highlight several Indigenous traditions of consequence for theories of energy justice. Of fundamental importance to each are the notions of interdependence and gratitude, often reinforced through ceremony (Manno & Martin, 2015). The Nuu-chah-nulth of the Pacific Northwest, for example, recognize an interrelationship between all life forms and across all dimensions of reality, in a view described as

*tsawalk* (one) in which relationships are *qua* (that which is) (Atleo, 2011). The community sees to basic needs as well as cultural experiences of its members (Atleo, 2011). Living in community includes the struggle to live in harmony and balance with all life forms similarly to mature ecosystems, a challenging task achieved through experience over time and maintained through protocols (Atleo, 2011). The Nuu-chah-nulth created a sacred community remembrance ceremony as a preventive measure to remind people to be vigilant in maintaining balance and harmony among beings (Atleo, 2011). Likewise, the Haudenosaunee of Northeastern North America practice the Thanksgiving Address to acknowledge each particular component of the environment with gratitude, from people to earth to stars to the Creator (LaFrance & Costello, 2010; Manno & Martin, 2015). The Haudenosaunee concept of seven generations further implies relationships and duties across time and space (Sheridan & Longboat, 2006)376. The Navajo of Southwestern North America also conceptualize the environment through the lens of interconnected relationships, known as *K'é*. Cultural identity is expressed through a reciprocal relationship with the land described as *Hózhó*, also maintained through traditional ceremony and offerings of prayers and songs (Necefer, Wong-Parodi, Jaramillo & Small, 2015). This inherent human-nature connection and the need to live in harmony with nature is further expressed through the concept of the good life—*sumak kawsay*, in the Quichua language of South America (*buen vivir* in Spanish) (Manno & Martin, 2015).

The mindset or state of recognition of this interdependence and resulting human responsibility is expressed through the Haudenosaunee concept of good mind, goodmindedness, or minding nature (*ganigonhi:yoh*) ((Sheridan & Longboat, 2006; LaFrance & Costello, 2010; Manno & Martin, 2015). “Goodmindedness stems from using a pure mind in all interactions with the natural world” enabling responsibility and respect for oneself and the natural world, which includes other people, and generating peacefulness, empowerment and strength (LaFrance & Costello, 2010, p. 63). Because the

good mind and the land are not possible without the other (Sheridan & Longboat, 2006), this mindset rejects an attitude of ownership, development and exploitation toward nature, demanding instead of a sense of collective entitlement, duty of stewardship (Manno & Martin, 2015), spatiotemporal belonging and humility (Sheridan & Longboat, 2006) and remembering and healing (McCaslin, 2005; Sheridan & Longboat, 2006).

The following research questions emerge. (1) Do these new theories to energy justice compliment more commonly employed approaches in the energy justice literature, or do they contradict them? (2) Can the non-Western theories and concepts summarized by Table 2 be integrated with Western ones? (3) How does bringing in new theories of justice address the challenges of integrating values and justice principles in policy? (4) Which communities or countries have made the most progress advancing energy justice principles, or positive effects?

**Table 2: Summary of Non-Western Theories and Applications to Energy Justice**

<b>Concept</b>	<b>Definition</b>	<b>Application to energy</b>
<b>Ubuntu</b>	The act of building community, friendship and oneness with the larger humanity.	Neighbourhoods efforts to promote energy efficiency, decisions about energy resources within a community
<b>Taoism and Confucianism</b>	The Tao or Dao emphasizes the virtuous path that leads to greater harmony amongst humanity. It assumes a universal nature and the means to an end is more important than the end itself.	Respecting due process in energy decisions, adhering to human rights protections when implementing energy projects
<b>Hinduism and Dharma</b>	Dharma carries the notion of righteousness and moral duty and is always intended to achieve order, longevity and collective well-being. It is context specific and doesn't render itself to universalization. Gandhi, a prominent example that espoused and practiced Dharma	Seeking to minimize the extent and distribution of energy externalities, offering affordable energy access to help address poverty
<b>Buddhism</b>	Expounds the notion of selflessness and the pursuit of individual salvation or nirvana. Often criticized for its inability to deal with real social issues	Respecting future generations with energy decisions, minimizing harm to the environment and society

<b>Indigenous Perspectives of the Americas</b>	Cultivation of a cultural mindset that recognizes interdependence of all life and enables good living through responsibility and respect for oneself and the natural world, including other people	Energy systems developed cautiously through long-term experience and sovereign cultural protocols, avoiding dramatic transformation of ecosystems, requiring restoration
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### **2.1.2 Valuing the non-human world**

That the field of energy justice has thus largely avoided the issue of justice to nonhumans comes as no surprise. The same anthropocentric bias is foundational to social theory and the social sciences (Barry, 2007), out of which the field of energy justice has recently emerged. However, realizing the enormity of the impacts of modern energy systems upon the nonhuman world, the limited success of past efforts to mitigate and reverse this harmful trajectory, and the increasingly widespread efforts to extend and redesign modern energy systems, it is ever more urgent that energy studies engage seriously with issues of justice to nonhuman nature.

We note that concerns with justice and nonhuman nature are not entirely absent from the literature on energy justice and related fields. The field of energy justice is rooted within the fields of climate justice and environmental justice, each of which has addressed matters of justice to nonhumans to a limited degree. Although climate justice has predominantly concerned itself with issues of justice among and between existing and future humans (Palmer, 2011), work such as that of (Schneider & Lane, 2006) on “inter-species equity” has influenced the thinking of energy justice scholarship (e.g. Sovacool & Dworkin, 2015). Environmental justice in particular recognizes the “sacredness” of the nonhuman environment and the interdependence of all species (Schlosberg, 2013, pp. 43–44). Here we look to existing traditions of non-anthropocentric ethics to further advance these initial efforts to include intrinsic values of nature within energy justice theories.

Regarding human-nature relations, the dominant models of ethics do remain anthropocentric, that is, the value of nonhuman nature is defined by the utility of nonhuman nature to humans. Early proponents of conservation of nature such as Gifford Pinchot and George Perkins Marsh did not seek to challenge the utilitarian view of nature as ‘natural resource’ primarily of value as a provider of goods and services for meeting human needs (Nash, 1989). As Taylor explains, “From this human-centered standpoint it is to humans and only to humans that all duties are ultimately owed. We may have responsibilities with regard to the natural ecosystems and biotic communities of our planet, but these responsibilities are in every case based on the contingent fact that our treatment of those ecosystems and communities of life can further the realization of human values and/or human rights” (Taylor, 1981, p. 198). By contrast, a non-anthropocentric view holds that nonhuman nature has a value based on an internal functioning (Binder, Hinkel, Bots, & Pahl-Wostl, 2013), meaning that nonhuman nature carries an inherent worth or intrinsic value existing independently of any utility to human beings. This perspective has a long tradition in Western religious and philosophical thought, for example, in the views of St. Francis of Assisi (1186-1226) and Baruch Spinoza (1632-1677).

We identify three well-developed traditions of non-anthropocentric theories of justice relevant for the field of energy justice: 1) animal-centered theories 2) life-centered or biocentric theories, and 3) ecosystem-centered or ecocentric theories.

#### *Animal-centered theories of justice*

These approaches typically associate intrinsic value with sentience, or a capacity for sensing or feeling, using arguments based upon principles of natural law. Arguing against cruelty to animals, Jeremy Bentham in late 18<sup>th</sup>-century England thus extended his logic of utilitarianism and the “greatest happiness principle” to include all animal life and in particular those animals that feel pain. An ethical society seeks to increase pleasure and reduce pain for all sentient animals (Nash, 1989). Similarly,



John Lawrence argued for the formal recognition of the “Rights of Beasts” to protect animals, primarily domesticated animals, from “flagrant and wanton cruelty” (Nash, 1989, p. 24). Henry Salt, founder of the Humanitarian League and author of *Animals' Rights Considered in Relation to Social Progress*, asserted that natural law applies equally as well to animals as to humans, and thus animals also have a right to life and liberty (Nash, 1989). More recently, Joel Feinberg argued that rights can be extended based upon “the interest principle,” meaning the capacity to be harmed or benefited and an awareness of such treatment (Feinberg, 2014). Perhaps the most influential and productive animal-centric theorists of ethics include philosophers Peter Singer and Tom Regan. Inspired by civil rights movements of minorities and women through the 1960s and 1970s, Singer argues in his 1973 article “Animal Liberation” and elsewhere for the principle of equality across human and animal interests. Consciousness and sentience, rather than human notions of intelligence, justify moral considerability (Singer, 1990). In *The Case for Animal Rights*, Tom Regan (2004) argues forcefully that “the animal rights movement is a part of the human rights movement” and thus rights of animals must be recognized (Nash, 1989, p. 143). These thinkers fundamentally reject the notion of any clear and compelling difference-in-kind between humans and other animals while allowing for differences in the degree to which all animals, including humans, can feel pleasure and pain or receive harm and benefit.

#### *Life-centered or biocentric theories of justice*

These approaches extend the sphere of intrinsic worth and moral considerability beyond sentient beings to include all living organisms. This perspective benefited from the work of Charles Darwin (1809-1882), who critically advanced the concept of a unity and continuity among all of life. Darwin’s theory of evolution as presented through two books, *On the Origin of Species* (1859) and *The Descent of Man* (1871), positioned humanity not within a hierarchy but rather within a branching network of related living beings shaped over time through interactions with the natural world (Nash,

1989). Nobel laureate Albert Schweitzer further advanced a biocentric ethic in developing his philosophy of “reverence for life” based on a worldview that he stated as “I am life which wills to live, and I exist in the midst of life which wills to live”(Schweitzer, 1989). Thus ethics consists of practicing an attitude of reverence and compassion toward every living being in the view that “It is *good* to maintain and cherish life; it is *evil* to destroy and to check life” (Schweitzer, 1989) [emphasis in original]. In every instance we are obliged to consider carefully whether it is truly necessary to kill or harm a living being (Cicovacki, 2009). Schweitzer in turn deeply influenced the ethical position of Rachel Carson who helped to popularize the perspective of concern for all non-human beings. Taylor sought to advance an explicit theory of life-centered ethics based on his notion of respect for nature. Taylor’s (1981: 207) biocentric outlook centrally includes the view that each living organisms is an end to itself, “a teleological center of life, pursuing its own good in its own way.”

More recently, Low and Gleason (1998) have developed a theory of ecological justice, which includes the principles that 1) every natural entity is entitled to enjoy the fullness of its own form of life, and 2) all life forms are mutually dependent and dependent on non-life forms, where life has moral precedence over non-life (Low & Gleason, 1998). Brian Baxter builds on this work by taking seriously the challenge of developing a comprehensive system of ethics that can guide human judgement regarding valid competing claims to a fair share of environmental resources. These resources are required for all ‘merely living’ beings, whether sentient or non-sentient, to survive and flourish (Baxter, 2005). Thus, Baxter’s ecological justice is a sophisticated theory of distributive justice that allows humans to arbitrate unavoidable claims to environmental goods and distribution of impacts:

*Clashes of interest between different organisms are to be decided by means of a distinction between basic welfare interests and non-basic ones, and between the different moral weights which can properly be attached to different kinds of organism. Basic welfare interests of less*

*weighty organisms (populations), such as that of surviving and flourishing, will trump the non-basic welfare interests of more weighty ones. When equally basic interests of organisms with different weights clash, then the interests of the more weighty organism trump those of the less weighty. When a species of organism is facing extinction, then, however lowly it is, its weighting receives an automatic boost. It will only be possible to trump the claims in justice of such an organism if the basic interests of the most weighty moral being (a human individual's life being saved) can be shown to be directly opposed to the basic welfare interest of the endangered organism.* (Baxter, 2005, pp. 149–150).

The core dimensions then of biocentric theories of justice involve the view that the intrinsic value of all living beings stems from a will to live and a basic interest to survive and flourish. Humans are obligated to demonstrate reverence and respect for all life by not only considering closely the underlying necessity of killing or harming life-forms for meeting basic and vital rather than non-basic needs, but also by fairly distributing both harms and beneficial environmental resources among competing claims of all living beings.

#### *Ecosystem-centered or ecocentric theories of justice*

These theories draw heavily from a holistic ecological perspective that finds intrinsic value in the basic functioning and interdependence of the biotic or ecological community as a whole. The science of ecology (a term first used by the German scientist Ernst Haeckel in 1866) significantly influenced the direction of ecocentric ethics and justice, through for example, the development of concepts such as ecological niche, introduced in the late 1920s by Charles Elton to describe the functional space that a species occupies in the biotic community, and the concept of ecosystems, first proposed in 1935 by ecologist Arthur Tansley as a less anthropomorphic and more scientific concept to describe a biotic community (Clements & Shelford, 1939; Nash, 1989). Early advocates of a holistic

perspective of interdependence include Henry David Thoreau, who considered all forms of nature, living and nonliving, as members of his community (Nash, 1989). Similarly for John Muir, all animals and plants, even rocks and water were inextricably bound within a great community of being (Nash, 1989). Alfred North Whitehead further developed a philosophy that viewed interdependence at all scales, from molecules to communities, as the source of intrinsic value (Nash, 1989). From the view that all matter, living and nonliving, was not only interdependent but also in constant flux, Russian philosopher Peter Ouspensky (1878-1947) argued that life and feeling must exist in everything and the earth as a whole was alive (Nash, 1989).

Inspired by such ecological thinking, Aldo Leopold perhaps most famously advanced the field of environmental ethics through his development of a land ethic, stating that “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise” (Leopold, 1989). For Leopold, “All ethics rest upon a single premise: that the individual is a member of a community of interdependent parts” (Leopold, 1989, p. 203). Leopold’s land ethic meant that value was found in the entire community more so than any individual member, changing the role of humans to “plain member and citizen” of the land community, and extending a “biotic right” to exist to the ecosystem as a whole to support “healthy functioning” (Nash, 1989, p. 69).

The view that the whole ecosystem or even the whole earth or universe is greater than its individual members and components influenced at least three strong intellectual currents: earth jurisprudence, a legal philosophy based on the rights of nature; deep ecology, which increasingly diminished or even erased the unique role of humans in nature; and ecofeminism and other critical theories that viewed humans as different yet integral to the rest of nature. Inspired considerably by Christopher Stone’s 1972 proposal *Should Trees Have Standing?* (Stone, 2010), theories of the rights of nature seek to confer rights, and therefore legal protection from injuries, to not only sentient beings

and life-forms but to entire ecosystems such as rivers and watersheds, and have influenced formal legal systems from New Zealand to Bolivia. Meanwhile, Norwegian philosopher Arne Naess, along with Americans George Sessions and Bill Devall, advanced the philosophy of deep ecology, based on a notion of “ecological egalitarianism” or “self-realization” meaning the right of all ecological selves, including individuals and ecosystems, to flourish (Nash, 1989, pp. 146–147). The self in this sense is integrated within the whole ecosystem (Devall & Sessions, 1999). Naess (1986) proposed an eight-point platform of deep ecology that includes the basic position that “The well-being and flourishing of human and nonhuman life on Earth have value in themselves” and asserting that “Humans have no right to reduce this richness and diversity except to satisfy vital needs. The platform further points to implications including significant change to policies affecting “economic, technological, and ideological structures” (Naess, 1986, p. 14).

Finally, critical perspectives emerging from ecofeminism as well as Bookchin’s social ecology (Bookchin, 2007) argued that the roots of not only ecological destruction but the very idea of a human-nature dualism were better explained as extensions of patriarchy, social hierarchy and oppression over both humans and nature (Nash, 1989). This view largely rejected deep ecology, particularly its more extreme “anti-anthropocentric” perspectives (e.g. (Callicott, 1989)), and rather argued that only through the elimination of social (i.e. human) hierarchies and modes of domination can humanity achieve mutually beneficial relationships with all of nature, including humans. Thus, for example, Carolyn Merchant proposed a “partnership ethic of earthcare” based on four precepts: 1) equity between the human and nonhuman communities 2) moral consideration for humans and nonhuman communities 3) respect for cultural diversity and biodiversity, and 4) inclusion of women, minorities, and nonhuman nature in the code of ethical accountability (Merchant, 1996). While recognizing significant points of divergence among these theorists, the central tenants to an ecocentric system of ethics involve the

intrinsic value of both individuals and ecological communities, stemming from the internal functioning, interdependence and ongoing processes of change among all living and nonliving members. Thus humans have a duty to allow and even nurture ecosystem functioning, integrity, stability, beauty and flourishing, through direct caring relationships as well as formal equal rights of nature.

The following research questions arise: (5) So far, animal-centered, life-centered, and ecosystem-centered justice theories have tended to advance themselves in separate fields—can those in Table 3 be integrated? (6) Moreover, can one incorporate social theories of justice based on anthropocentric views with non-anthropocentric views—what commonalities exist, and what tensions result? (7) Lastly, and most difficultly, should social justice value all forms of life equally, or sentient life more—put another way, should species be arranged in a hierarchy of moral concern?

**Table 3: Summary of Non-Anthropocentric Theories and Applications to Energy Justice**

<b>Concept</b>	<b>Definition</b>	<b>Application to energy</b>
<b>Animal-centrism</b>	Difference in degree but not in kind between humans and all other animals. Valuing and recognizing rights of all sentient life	Energy development avoids harm and provides benefits to all sentient animals
<b>Biocentrism</b>	Valuing all living beings based on a reverence for life that stems from recognition of the will to live and the basic interest to survive and flourish	Energy decisions guiding by consideration of competing claims to a fair share of environmental resources among all living beings, where basic welfare interests outweigh non-basic welfare interests
<b>Ecocentrism</b>	Moral consideration for human and nonhuman communities and the basic functioning and interdependence of the ecological community as a whole	An energy system is right when it tends to preserve the integrity, diversity, resilience, and flourishing of the whole community, involving direct caring relationships and formal rights of nature

### **2.1.3 Recognizing cross-scalar issues of justice**

We maintain that just as the world as a whole has become increasingly interdependent, so has the world of energy – the energy industry, its resources and shortages, its systems of production and consumption, its prices, and its pollution. This interdependence demands that a systematic assessment of energy justice takes a concomitant global, multi-scalar, spatial and cross-system focus.

Mullen and Mardsen (2016) note that some aspects of energy justice, such as “mobility justice,” transcend spatial scales. In parallel, Jenkins et al. (2016b) rightly point out that a proper approach to energy justice ought to be multiscalar and include “whole energy systems” that go well beyond the simple dichotomy of “energy supplier” or “energy consumer.” Their case in point is nuclear energy. To better assess its risks and rewards, one must appreciate its entire fuel or life cycle across space and time. This would necessitate looking at injustices not only related to the building, operation, and decommissioning of nuclear power plants, but front-end components of the fuel cycle such as uranium mines, uranium mills, and fuel fabrication facilities and back-end components such as reprocessing facilities and temporary and permanent waste storage sites. Looking at such system-wide scales, they note, enables analysts to better value the full cost of that system, to conduct more rigorous analysis showing its complex impacts on dimensions such as energy security, and to draw attention to different sets of actors that may be responsible for energy injustice. This last point—responsibility—is especially apt given that it moves beyond only talking about the victims of energy injustice—those facing or suffering injustice—to those decision-makers and other beneficiaries energy development that have a higher degree of responsibility for it.

An exemplary example concerns consumption based emissions, a term that refers to the greenhouse gas (GHG) emissions embedded within goods and services (Chancel and Piketty 2015) imported and consumed by the world’s high-income consumers (Huber 2015). An exploration into this

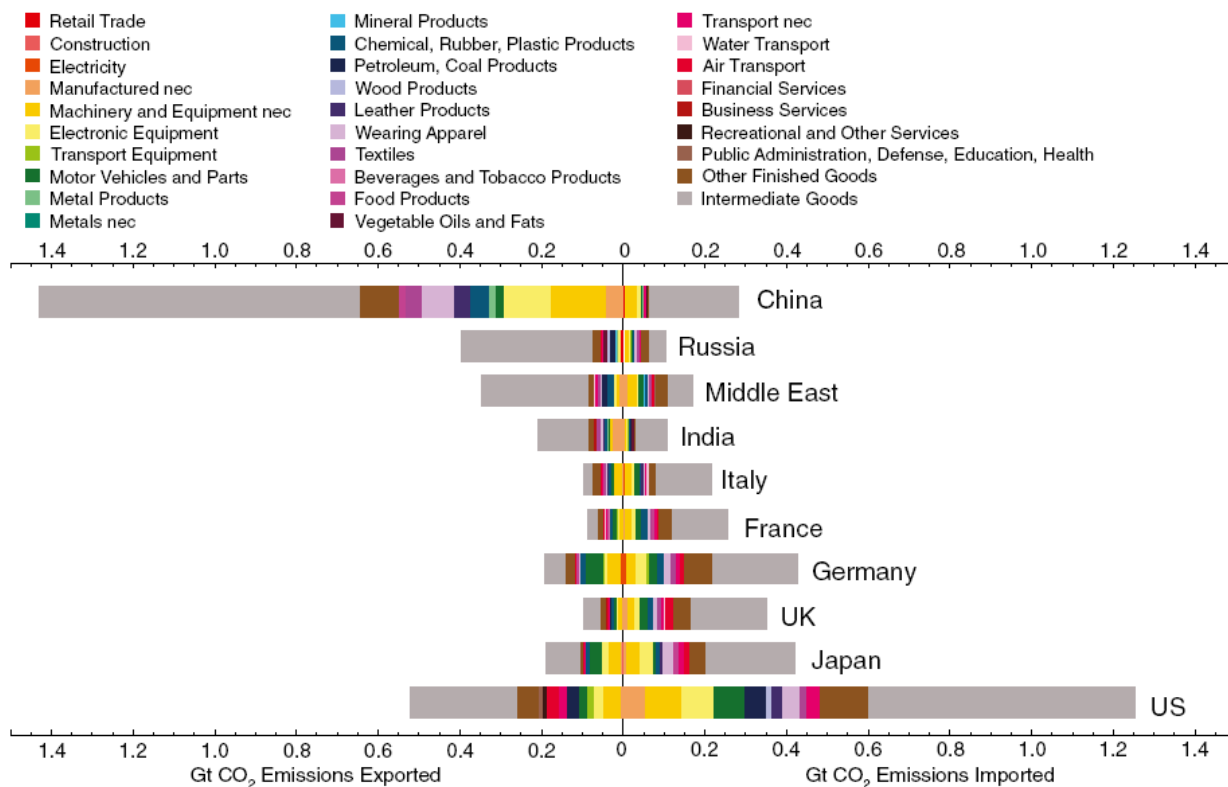
nexus unearths deep issues of inequality within and between nations, and between generations (Oxfam 2015); questions of energy and equity (Hornborg 2011); and concepts of the transition that are at once just and low-carbon (Swilling and Annecke 2012). Under the UNFCCC, countries are required to submit national emission inventories (NEI) based on emissions produced within the territorial boundary of the country in question (Peters 2008). However, heavy criticism has been levelled at this territorial measurement for its failure to account for emissions embodied within the increasing import of commodities and products from abroad, as detailed studies have shown in relation to the UK (Scott & Barrett 2015). Consequently, NEIs present a wholly inaccurate portrayal of national impacts and fail to account for the “social, economic and ecological relations that underpin the experience of consumption” (Bridge 2010:4). Energy demand and consumption is therefore inaccurately and inequitably portrayed within a ‘national scalar frame’ (Bridge 2010:825) while GHG emissions embodied within consumer and capital goods are disconnected from their social and environmental origins (Lohmann and Hildyard 2013).

The salience of cross-scalar justice issues therefore becomes apparent when one looks at the interconnected nature of supply-demand patterns and consequent consumption-based emissions. For example, global trade in oil and gas amounts to roughly \$1.2 trillion per year and two-thirds of all oil and gas is traded internationally in addition to another \$1 trillion in annual revenues from the extractive industries sector, of which coal is the largest contributor. No less than 200 billion barrels of crude oil, worth some \$20 trillion, are priced off the Brent benchmark, the world’s largest, each year. Davis and Caldeira (2010) and Davis et al. (2011) analyzed trade figures from 113 countries across 57 industry sectors and concluded that almost one quarter of global emissions of carbon dioxide were from internationally traded commodities and products each year. In some countries such as France and the United Kingdom, the number was greater than 30 percent—that is, almost one-third of emissions were



affiliated with imported products; others, such as China, India, Russia, and countries from the Middle East, were net carbon exporters, as shown in Figure 1. Follow-up research has confirmed that 37 percent of global emissions were from fossil fuels traded internationally—that is, they were not consumed in their countries of origin—and that an additional 23 percent of global emissions were embodied in traded goods and spread across a supply chain involving at least two or more countries. As Sioshansi (2011) puts it, “We in the rich countries are as much responsible for the pollution in [China and India] because we buy their cheap finished products.”

**Figure 1: Balance of CO<sub>2</sub> emissions embodied in imports and exports of the largest trading countries.**



Note: colors represent trade in finished goods by industry sector. Traded intermediate goods (gray) are those used by industries in the importing country to meet consumer demand for domestic goods.

A final set of examples emphasizing the necessity of a spatial, multi-system, global approach relates to the outsourcing or exporting of emissions in so-called low-carbon energy transitions. Denmark, for instance, has seen its use of wind power grow from a mere 11 TJ of gross generation in 1978 to 28,114 TJ in 2010. In 2015, wind turbines generated 42 percent of the country's electricity, contributing both to a low-carbon footprint and as a possible model for other countries to follow. Indeed, the numbers look good when one assesses only the impacts to the Danish electricity grid. However, such a national focus obscures the fact that those very wind turbines have externalities across their construction and manufacturing, ones that both offset (in part) their environmental credentials and also result in significant emissions being outsourced to China and South Korea. Taking into account "environmental profits and losses," one study found that wind turbines in Northern Europe need to work for 2.5 to 5.5 years to payback their carbon debts. Even though turbines are installed in Europe, the study also found that China and South Korea accounted for about 80% of embodied emissions and resulting environmental damages across each type of turbine (Sovacool et al. 2016b). The Nordic region, including Denmark, is also a net exporter of fossil fuels, namely oil and natural gas (Sovacool 2017).

Wind energy is not the only energy system prone to this exporting of emissions, of course. Shale gas in the United States is a final illustration. There, shale gas production has led to more oil and coal use abroad. The drop in the price of natural gas motivated by shale gas has driven America's drillers to hunt for oil instead in global markets. Other companies have shifted away from drilling for dry gas and instead are focusing on plays that provide natural gas liquids (Logan et al. 2012). And, although coal use in the United States has declined as a result of shale gas, the foreign export market has more than made up for the loss, meaning more coal is now being combusted in Europe and Asia (Parenteau and Barnes 2013).

A number of research questions emerge: (8) If it is a great deal easier to measure territorial greenhouse gas emissions from a production basis than a consumption one, what changes in data collection or measurement are needed? (9) Can we create an international standard for consumption emissions accounting, and pragmatically how would one set targets and measure progress on this basis? (10) How should responsibility for emissions be applied? (11) Moreover, when all emissions are accounted for across all of an energy systems' lifecycle, which emissions are deemed the most justified? (12) Lastly, can we find examples of successful low-carbon transitions that did not rely on outsourcing or exporting emissions?

## *2.2 Tensions and tradeoffs in energy justice practice*

A second group of new frontiers relates not to theory, but tensions and complexities with trying to implement energy justice principles in practice. These include business models and co-benefits, managing tradeoffs, and avoiding hegemonic or simplistic discourses.

### **2.2.1 Identifying business models and co-benefits**

It is often presumed that justice is bad for business, and that energy justice in particular, with its promotion of due process, protection of human rights, and appreciation of externalities (among others) would result in the cost of energy rising substantially. As the writer Naomi Novik once quipped, “justice is expensive. That is why there is so little of it, and it is reserved for those few with enough money and influence to afford it.” Although energy justice has the potential to impact community livelihoods and the bottom line of energy corporations positively, such dimensions have not yet been systematically explored. Put another way, sometimes energy justice can make economic or financial sense, it can result in an array of “co-benefits,” or positive side effects (Miyatsuka and Zusman 2010). This is because often the things good from a justice standpoint are good from an environmental standpoint, and sometimes an economic one, namely:

- Enhancement of energy security;
- Reduced emissions and impacts of climate change;
- Preservation of land use and wildlife;
- Fuel availability and/or stability and predictability of prices;
- Technological learning and accelerated rates of innovation;
- Enhanced reliability, resilience, or the avoidance of blackouts;
- Minimal water consumption or usage;
- Mitigation of hazardous on-site accidents;
- Reductions in poverty or empowerment of vulnerable groups;
- Skills diversification and the provision of high quality jobs.

Business opportunities and markets may arise to capture some of these co-benefits, creating situations where justice principles go hand in hand with enhanced business revenue. Hiteva and Sovacool (2017) for instance examine the extent that elements of energy justice can be incorporated into the development of innovative business models for energy services, equipment, and supply. Using four case studies at different scales—community carbon cooperatives, urban fuel poverty companies, regional European energy service companies, and global community interest companies—they illustrate the areas where energy justice could inspire innovative practices of value capture and creation in the energy sector, such as energy service companies that reap benefits from helping eradicate fuel poverty, to global cooperatives co-investing in wind energy projects alongside traditional utilities.

A focus on business models and co-benefits bring to mind the following research questions.

(13) How can justice co-benefits best be measured, estimated, and monetized, if at all? (14) How does one attempt to value justice elements qualitatively, especially for things that have close to infinite value, such as the dignity of human beings, or the preservation of endangered species? (15) Co-

benefits often involve split incentives and different agents—how can they best be monetized and redistributed towards socially optimal purposes? (16) Do situations exist where all ten of the justice principles articulated below (in the section to come) can still result in positive business returns?

### **2.2.2 Managing tradeoffs within and among energy justice principles**

Sometimes or perhaps even often, energy justice issues do not exist in black or white – there is no single, or even identifiable, immediate “winner,” nor an immediate, discernable “loser.” Instead, there are bundles or constellations of winners and losers, and even “pro-justice” interventions can create some type of inequality, even when they offer net societal benefits.

To illustrate this point, consider a situation in which a community needs to take decisions on depletion rates of a given natural resource. Respecting future generations would suggest to set slow depletion rates, which would also fall in line with the principle that future generations should not be impacted by damage caused by the present energy systems. Yet, an important aspect of distributive justice also pertains to making the most of the overall value of the available resource endowment. The latter, however, will decrease the more the world seeks to minimize the production of negative externalities and invest in alternative energy resources. Some justice criteria call for expanded depletion, others for restricted depletion..

In *Energy and Ethics*, one of the authors identified eight case studies where at least one principle of energy justice was achieved (Sovacool 2013). Danish energy policy offers an example of how self-organized groups of cooperatives played a strong role in convincing Denmark to switch from centralized power plants to decentralized wind farms, and completely rejected nuclear power in the process, enhancing availability. In England, thousands of elderly and poor British citizens suffer premature “excess winter deaths” each year because they cannot afford heat, yet the Warm Front program lifted many of these homes out of fuel poverty and enhanced affordability. The World Bank’s

own Inspection Panel has attempted to enhance aspects of due process by creating an independent accountability mechanism where affected communities can protest plans for hydroelectric dams, coal mines, road transport systems, and other types of infrastructure. Chad, Nigeria, Azerbaijan, and others have voluntarily joined a global transparency effort called the Extractive Industries Transparency Initiative that explicitly gives civil society groups and communities a platform to raise issues over petroleum revenues. The small island country of São Tomé e Príncipe has decided to invest all of its revenue from the energy industry into a fund for social development projects and future generations. A national infrastructure bank has pumped millions of dollars into the dissemination of solar home systems in Bangladesh to the point where more than five million individuals, mostly women and children, have received affordable yet high quality light for the first time (meeting the principle of equity). A collection of rich countries such as Germany and the United States have banded together to donate half a billion dollars to least developed countries such as Bhutan and Cambodia through the Least Developed Countries Fund so that they can prevent glacial floods and improve their food security in the face of climate change. An ambitious proposal by Ecuador to keep almost one billion barrels of oil in the ground under the Yasuní National Forest operated for almost five years so that its precious diversity, and the cultural heritage of the Huaorani, Quechua, Tagaeri, and the Taromenane people, could be preserved.

However, as of early 2017 no less than four of these cases are already obsolete. The United Kingdom cancelled its Warm Front program and has yet to implement a replacement (Sovacool 2015). Recent plans to reform the role of the World Bank's Inspection Panel have threatened to undermine its authority (Bridgeman-Fields & Mohr 2016). The international community has abolished the Least Developed Countries Fund (Sovacool et al. 2017). And Ecuador's president Correa repealed the Yasuní project on the grounds that he was unable to raise even a fraction of the requested funds (Sovacool and

Scarpaci 2016). Equally worrying, we have yet to find an example where *all eight* principles are realized. More often than not, implementation challenges can thwart well-intentioned justice concerns. Transition towns, which started in the United Kingdom and are now growing around the globe constitute a small minority of community level endeavors that embody the principles of energy justice and more (Gui & Nardi, 2015), but the scalability of these efforts at a city or national level remains in doubt.

Across the globe, South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) was initiated in 2011, and its economic development criteria required that local communities participate in renewable energy projects (Baker 2015). In practice, however, the community benefit requirements became reduced to financial commitments and did not make any recommendations or obligations to ensure a just process is followed in project development and operation, or the later decommissioning phase. Indeed REIPPPP's procurement rules allowed energy companies to develop the projects, including complying with their contractual arrangements in respect of local ownership, without undertaking meaningful consultation or even informing affected citizens. Perhaps understandably, the tight timelines and what many perceived as an overly onerous bidding process had the unintended consequence of reducing the community benefit aspect to financial commitments and mere compliance rather than leveraging the full socio-economic potential that would have been gained from a more sustained approach. As a result, meaningful engagement was compromised and stifled. Furthermore, the high costs and expertise required for the professional implementation of relationship building measures (e.g. stakeholder management, external relations, community liaison) and REIPPPP's prescribed tight bid submission timelines served to disincentivize community engagement (Wlokas, 2015; Wlokas and Soal, 2016).

The British and South African examples are not isolated. All too commonly, there are obvious situations where justice principles erode each other or lead to the dispossession of people or their livelihoods (Nadesan and Pasqualetti 2016). Too often, the impacts of energy interventions—even those that have a net social good, or attempt to reach justice principles—have devastating impacts on vulnerable groups. As one example, attempts to alleviate energy poverty in India have involved an expansion of coal-fired power that, in tandem, has resulted in an increase in the mining of coal, some of which is done by child laborers such as those in Figure 2. As another example, the provision of baseload electric power behind the modernization of the former Soviet Republics—efforts that lifted millions out of poverty—have come at the cost of “Chernobyl Heart” connected to the 1986 nuclear accident and deteriorating public health across Belarus and Ukraine (Marples and Lerd 2008).

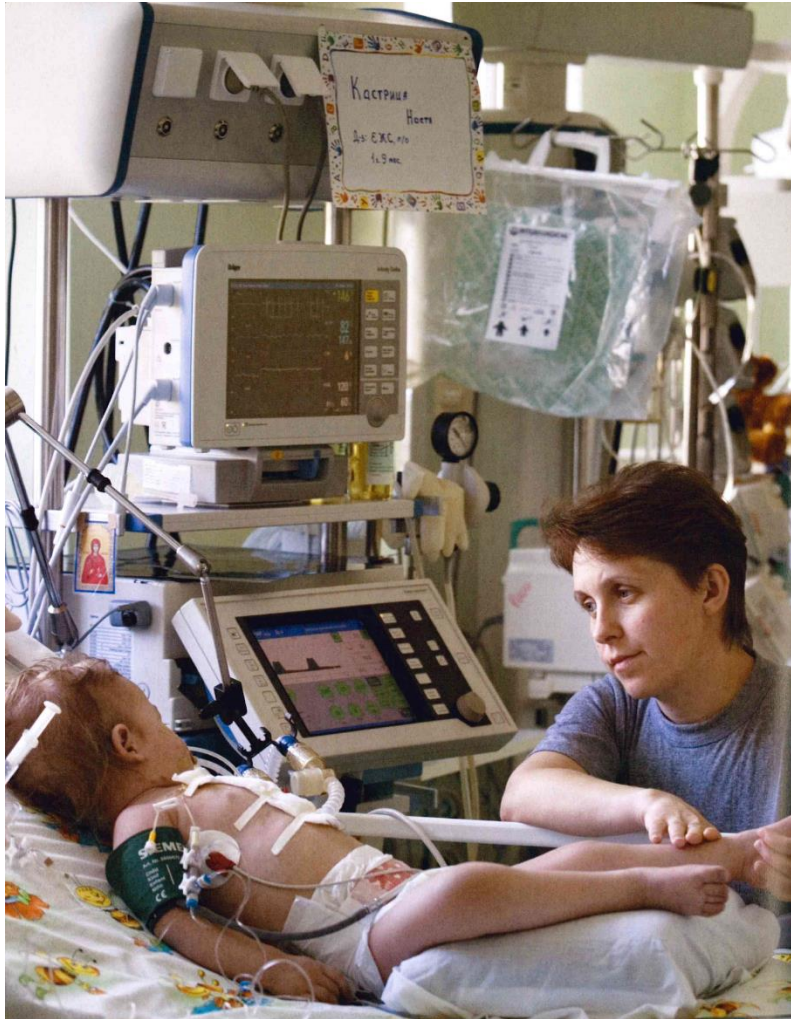
Figure 2: Legacies of Energy Injustice in India and Eastern Europe

- a. Top panel: Rajan, aged 9, mines coal for 16 hours a day for the equivalent of \$0.50 in wages in Northern India*





- b. Bottom panel: the post-op department at the Children's Cardiological Center in Minsk, Belarus, where only 15-20 percent of babies are born healthy due to the Chernobyl nuclear accident*



Other examples abound. The expansion of large hydroelectric dams around the world, which currently produce more electricity each year than the world's fleet of nuclear reactors, clearly provide available and affordable power (meeting the first two criterion), but their construction and operation involved the forcible relocation and displacement of at least 80 million people, violating the principles of due process and accountability (World Commission on Dams, 2001).

Landfills and waste-to-energy facilities in Scotland and nuclear storage facilities in Taiwan have met principles of availability and sustainability, but violated those of equity: studies have confirmed that the poor or marginalized suffer a “triple jeopardy” of being most exposed to higher

levels of pollution, being more vulnerable and more likely to suffer health impacts, and being least responsible for generating environmental problems in the first place (Walker 2012).

The production of alternative transport fuels in Canada has also met the principles of availability and affordability, but done so by displacing and damaging indigenous communities such as the Dene, Cree, and Metis (Walsh and Stainsby 2010).

The installation of wind farms in Oaxaca, Mexico, has also met principles of availability and sustainability, but violated due process, transparency, and equity, with indigenous landowners receiving a meager 1.5 percent of the gross income from energy production from a series of wind farms under construction, with the remainder going to companies such as Cemex, Gamesa, and Iberdrola, even though some of the land utilized, such as Juchitan, was appropriated from communal property without consent (Oceransky 2010).

In Gujarat, India, land acquisition processes for solar energy power plants (called “parks”) have promoted the justice principles of availability and sustainability, but done so only by exacerbating the precariousness of vulnerable communities, who were left to suffer loss of livelihoods due to the enclosure of common land and extra-legal mechanisms through which land acquisitions for the project have reportedly taken place. There, solar energy has only created “a regime of accumulation” whereby “low-carbon coalitions of interests can maximize their gains by dispossessing vulnerable social groups of their life-sustaining assets” (Yenneti et al. 2016).

The prevalence and potential of justice tradeoffs leads to the following research questions: (17) what tools or mechanisms can best enable planners or analysts to “plan for tradeoffs”? (18) Who stands to benefit or suffer from a potential energy policy or energy justice intervention, now or in the future? (19) What is the place of deliberation when protagonists don’t agree with how justice tradeoffs are managed? (20) Does improvement in some energy justice dimensions necessitate tradeoffs in other

dimensions? (21) When tradeoffs exist, should special protections be afforded for the particularly vulnerable or disenfranchised should they be given greater weight or priority? (22) Are there energy justice cases that do not exhibit tradeoffs and tensions?

### **2.2.3 Exposing unjust discourses and narratives**

A final cutting edge area of energy justice scholarship relates to its discursive elements, or how rhetorical narratives surrounding energy justice are employed. This involves unpacking the rhetoric or discourse of energy justice.

By “discourse”, we mean the collection of ideas, concepts, and categories that create “thought collectives,” “regimes of truth,” or “grids of intelligibility” behind how people, or institutions, think and act. Foucault famously described this intersection as the ritualization of power into a truth regime, and contended that “each society has its regime of truth, its general politics of truth: that is, the types of discourse which it accepts and makes function as true; the mechanisms and instances which enable one to distinguish true and false statements” (Smith 2002). These truth regimes demarcate what is considered possible and represent a particular way of viewing reality. According to this view, energy justice is not about a singularly coherent system of ideas and beliefs with unified ideological schemes. Instead, narratives of energy justice are replete with contradictions and are continually (re)produced and negotiated as people experience them.

There are at least two types of unjust energy discourses that must be exposed: those that promote their own power structures and forms of hegemony, and those that proclaim their justice credentials when they really result in injustice. Harvey (2000) for instance critiques various market processes that use the rhetoric of “justice” but in fact only serve to reinforce asymmetries in wealth and power, rather than promoting progress towards homogeneity and equality. Sovacool et al. (2015) similarly found that many interventions framed as “pro-climate change adaptation” or “pro-

development” in fact served to transfer public assets into private hands, limit access to resources or marginalize particular stakeholders in decision-making activities, intrude on biodiversity areas, and worsen wealth inequality within a community. Barrett (2013) found that in Mali, for instance, village leaders elected to implement particular measures – for example flood defenses – to preserve their own cassava gardens.

A second type of discourse we must beware of is that which greenwashes or hides the unjust elements of policies or programs discursively framed as being energy just. The international oil company Chevron has been accused of providing aid, helicopters, and pilots to an armed group that then gunned down nonviolent protestors on an oil-drilling platform in Nigeria, killing some and injuring others, who were later reputedly tortured (Sovacool 2013). These actions suggest an attitude of arrogant indifference to humanitarian concerns and questions of basic justice. A comment made to *Newsweek* by a Chevron lobbyist in Washington D.C., speaking about an environmental lawsuit brought against the company by indigenous people in Ecuador, suggests a remarkable degree of contempt for the developing countries in which Chevron operates: “We can’t let little countries screw around with big companies like this” (Quoted in Sovacool et al. 2014). Yet, to improve the public image of the company, Chevron instead decided to run an advertising campaign highlighting their commitments to justice principles (among others). As the caption for a print advertisement for Chevron shown in Figure 3 states, under a photograph of two smiling African women, “Oil Companies Should Support the Communities They’re Part Of.” It (disingenuously) ran this campaign at the same time that the company was reputedly compelling the Nigerian plaintiffs in a lawsuit, impoverished widows and children, to reimburse the company for its attorneys’ fees. Bert Voorhees, one of the lawyers for the plaintiffs, commented: “That’s how they litigate. . . . The point is to scare off the next community that might try to assert its human rights” (Quoted in Sovacool 2014).

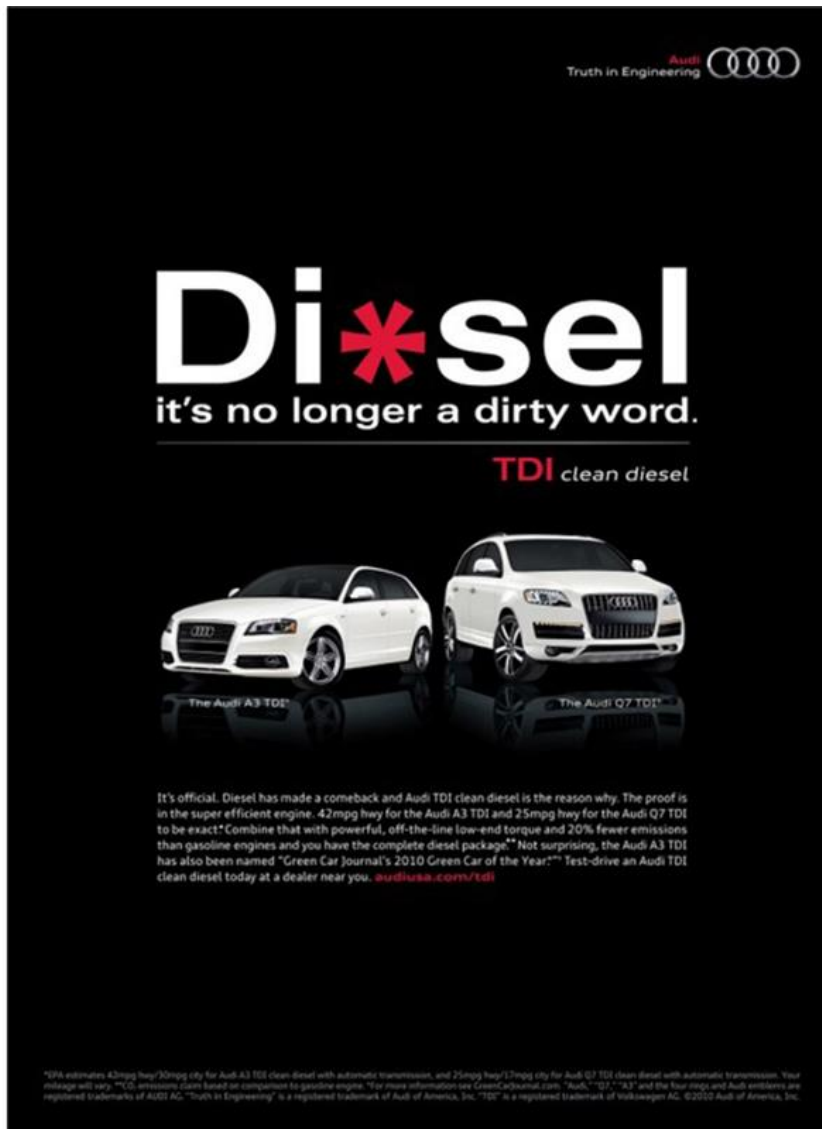


**Figure 3: Chevron Advertisement Falsely Proclaiming the Company's Commitment to Local Communities, 2010**



The Volkswagen group offers another paradigmatic example. During the same time they featured advertisements spotlighting the environmental credentials of their cars (such as Figure 4) they actively cheated and manipulated emissions tests for 11 million of those vehicles (Gates et al. 2016). Vehicle software was modified to adjust catalytic converters and valves to emit nitrogen oxide, which contributes to acid rain as well as emphysema, bronchitis, and other respiratory diseases among humans, far in excess of standards.

**Figure 4: Volkswagen Advertisement Falsely Proclaiming the Company's Commitment to Clean Diesel Engines, 2013**



As a final example, the nuclear reactor manufacturer Westinghouse ran a series of advertisements in the summer of 2013 flashing some of the words depicted in Figure 5: “Did you know that nuclear energy is the largest source of clean air energy in the world? No carbon emissions. And no air pollution. Just safe, clean and reliable electricity.” This claim is patently false: Nuclear reactors do produce greenhouse gases throughout the various stages of their lifecycle, especially uranium mining and milling, fuel enrichment and fabrication, and spent fuel storage, as well as the backup power

needed during refueling and the carbon embodied in many energy-intensive construction materials such as concrete or steel. With very low uranium ore grades in use, some nuclear power plants currently emit the equivalent of 337 gCO<sub>2</sub>/kWh, making them *already* as environmentally damaging as emissions from equivalent-sized natural gas-fired power plants (Beerten et al. 2009).

**Figure 5: Westinghouse Advertisement Falsely Proclaiming that Nuclear Power is Emissions-Free, 2013**



Sadly, research from marketing, advertising, and consumer studies suggests that such tactics may be the norm rather than the exception (Scarpaci et al. 2016). One study conducted in-depth interviews with senior corporate executives and found that they were plagued by “moral myopia,” a distortion of moral vision preventing ethical issues from coming into focus, and “moral muteness,” an inability to talk about ethical issues (Drumwright and Murphy 2004). The study noted that business administrators were more concerned with competitors stealing their ideas than accurate descriptions of products or the social good. Some actually viewed ethics as “bad for business” and claimed that imposing a code of conduct on these activities would violate tenants of free speech.



Multiple research questions arise: (23) How can we harness the motivational power of justice discourse without succumbing to its pitfalls? (24) How pervasive are dishonest claims or false narratives within justice discourse? (25) Where do we draw the lines between marketing and false advertising? (26) How do we counter the “moral myopia” of those behind misleading justice statements?

### 3. An energy justice framework reconsidered?

The six new frontiers of energy justice do rightly challenge existing conceptual frameworks. To date, the arguably most comprehensive energy justice framework is presented in Sovacool et al. (2016), and it consists of the first eight principles articulated in Table 4. However, based on the discussion above, we see the need to modify this with two principles: one of *resistance*, standing up to injustice, and one of *intersectionality*, recognizing how issues of energy justice are intertwined with other elements such as race, class, or power.

**Table 4: An Energy Justice Conceptual Framework Reconsidered**

No.	Principle	Description
1	Availability	People deserve sufficient energy resources of high quality (suitable to meet their end uses)
2	Affordability	All people, including the poor, should pay no more than 10 percent of their income for energy services
3	Due process	Countries should respect due process and human rights in their production and use of energy
4	Transparency and accountability	All people should have access to high quality information about energy and the environment and fair, transparent, and accountable forms of energy decision-making
5	Sustainability	Energy resources should be depleted with consideration for savings, community development, and precaution
6	Intragenerational equity	All people have a right to fairly access energy services
7	Intergenerational equity	Future generations have a right to enjoy a good life undisturbed by the damage our energy systems inflict on the world today

8	Responsibility	All actors have a responsibility to protect the natural environment and minimize energy-related environmental threats
9	Resistance	Energy injustices must be actively, deliberately opposed
10	Intersectionality	Expanding the idea of recognitional justice to encapsulate new and evolving identities in modern societies, as well as acknowledging how the realization of energy justice is linked to other forms of justice e.g. socio-economic, political and environmental

One central theme among the new, non-Western and non-anthropocentric theorists introduced above is the urgency of *resisting injustice*. Drawing from Gandhi but also others, we must actively and deliberately resist projects that are unjust, oppressive and violating all or a majority of our energy justice principles in Table 4. This performative principle of justice invokes a sense of duty or “political obligation” on a citizen or group of citizens to ensure the adherence of political authorities to these broad principles of energy justice. These duties or acts of resistance vary according to the scale of violations and include a wide range of strategies and tools like legal action, popular education, political lobbying, public demonstrations, digital campaigns or a combination of these, amongst others. In the context of the urgency of climate change and the demands for leaving fossil fuels in the ground (Muttitt, 2016), deliberative resistance could assume the form of civil disobedience as mooted by (Lemons & Brown, 2011) where civilians adopt non-violent methods to stop or shut down fossil fuel infrastructure projects.

To offer a few anecdotes about resistance in practice, in the United Kingdom, climate activists breached the Kingsnorth Power Station in 2008 and ruined one of the plant’s 500 MW turbines before unveiling a banner down the length of one of the cooling towers. The act forced the coal- and oil-fired facility to suspend electricity generation for four hours and caused greenhouse gas emissions over the entire country to temporarily drop two percent (quoted in Sovacool 2013). In Australia, dozens of

protesters scaled 50 meter walls and chained themselves to the Hay Point Export Terminal near Mackay, forcing its closure for two days, preventing the export of 180,000 tons of coal, and causing \$14 million in lost revenues (Sovacool 2013). In the Port of Hamburg, Germany, the *Klimacamp* group sent 200 people to blockade the world's largest refinery for biodiesel operated by Archer Daniels Midland, shutting down the refining of Indonesian palm oil (Sovacool 2013). In the village of Sompeta in Southern India, 2,166 consecutive days of relay hunger strike over the course of 2009 to 2015 and the death of two villagers eventually led to the cancellation of land allotment for a 2,640 MW coal plant (Kotikalapudi 2016). In Bangladesh, 50,000 people gathered in protest against the mining of coal in Phulbari that witnessed the death of three people (Kotikalapudi 2016). British company GCM resources is still awaiting approvals from the Bangladesh Government to begin its mining operations at Phulbari. Conflicts such as these can cost companies millions of dollars in delays, lawsuits, missed opportunities, social dislocation, and the damage of corporation reputations. Some of these actions may be seen as alarming and some were certainly illegal. But the participants were acting from deeply held convictions. The point is that when people feel that energy justice has been violated, they can disrupt operations, boycott brands, picket companies, and even attack and destroy energy infrastructure and equipment—all forms of resistance or civil disobedience. Most recently, those opposing the election of President Trump have couched their activism in terms of the language of “resistance,” as Figure 6 illustrates.

**Figure 6: Poster in Virginia Urging University Students and Faculty to utilize Resistance to Oppose the Inauguration of President Donald J. Trump, January, 2017**



**INAUGURATE  
RESISTANCE**

**A DAY OF TEACHING,  
LEARNING, AND  
ORGANIZING, IN  
THE FACE OF  
DANGERS TO OUR  
COMMUNITIES AND  
PLANET POSED BY  
THE TRUMP AGENDA**

**THE LYRIC THEATRE  
BLACKSBURG**

**JANUARY 20, 2017  
10:00 AM - 4:00 PM  
VIGIL AND MARCH AT 4:30**

One central theme emerging from the discussion of frontiers in tensions and tradeoffs is the *intersectionality* of justice concerns (and even principles). Energy justice is intertwined with other relevant social issues that we all are grappling with – globalization, economic inequality, immigration, health, and security. Women are more impacted by poor energy access than men, race disproportionately impacts certain communities than others, immigrants face structural difficulties in accessing local resources. Energy injustice therefore involves intricately overlapping layers or marginality. The concept of intersectionality has its roots in the critiques of feminist theory (Crenshaw, 1993) but has since rendered itself as a useful theoretical tool for understanding the multiple identities that individuals and communities carry and its consequent implications in the form of disparate resource distribution and social outcomes. As mentioned earlier, the principles of energy justice are built upon social justice theories and therefore, within any specific context, necessarily intersect with the way we address the pervasive social issues of our time, vis-a-vis economic and gender inequality, immigration, poverty and national security, to name a few. For instance, it is well documented that women are more impacted by lack of energy access than men (UNDP, 2011). Communities along the lines of race, caste, religion or a combination of such identities can be disproportionately impacted as a result of either unjust legacy structures or new biases in a society. Intersectionality therefore allows us to unpack the concept of the marginalized along several intersecting identities and better inform decision makers in delivering energy justice.

A final four research questions follow: (27) how can researchers or planners harmonize and optimize these 10 energy justice principles in analysis, design, or implementation? (28) Drawing from Heffron et al. (2015), can energy justice principles such as these be quantified and then measured in terms of performance? (29) Energy justice principles, evidently, apply to near just societies. How do these they differ in corrupt and unjust political regimes? (30) How can intersectional methods and

analysis be applied to expand the idea of recognitional justice and how can that inform the delivery of energy justice?

#### 4. Conclusion and policy implications

Our piece has admittedly been written first and foremost for energy researchers and analysts. However, compelling policy implications do arise from this analysis as well.

The first conclusion is the most direct and simple: we need to think about energy technology and systems as more than simply hardware, as beyond a black box. They are not merely devices for distributing barrels of oil, conduits for cubic meters of natural gas, mechanisms for conveying coal, or intricate socio-technical systems delivering electricity, mobility, heat, and so forth. Up until this point many experts have primarily focused on energy problems as purely technical matters, and policymakers continue to rely extensively on technology and economics to provide solutions to what are, in essence, deeper social, political, and cultural problems. A justice approach to energy highlights that energy systems can also be mechanisms of resource extraction that deplete assets available for future generations to present ones, systems of segregation that separate negative externalities from energy production from the positive attributes of energy consumption, and symbols of exclusion, marginalization, or unfair decision-making processes. Assessments of energy systems that ignore these (sometimes hidden) social justice dimensions threaten to make them appear natural or normal.

The second conclusion is that energy analysis and planning should be informed by more than the usual tools of cost benefit analyses, techno-economic models, or scientific and engineering projections about new technologies or penetration scenarios. Energy system interventions are about more than technology and economic development; they are about political power, social cohesion, and even ethical and moral concerns over equity, due process, and justice. Energy systems can be reconceived as a political, deliberative challenge involving the satisfaction of competing preferences; a

social dilemma pitting, at times, the climatic and development goals of energy security or improved resilience against the pressing needs of marginalized and vulnerable populations; and a moral quandary revolving around how energy burdens and benefits are fairly, or unfairly, disseminated. No matter how noble the intentions of engineers and planners, or how well interventions or new energy systems are designed, they have their own inescapable underlying ramifications for justice. Perhaps more personally, even readers convinced they may be “winners” of the existing energy system today could find themselves—or their future kin—“losers” tomorrow.

The incorporation of considerations of justice into energy policymaking will alter how we view entire energy systems, with concerns such as equity and equality of distribution becoming more predominant, while other concerns, such as profit-maximization, recede in importance. We believe that what is really needed is for energy regulators to recognize and appreciate the concerns of social justice—we need “justice aware” energy policy. We further propose that the energy justice conceptual framework as presented here offers a critical tool to inform energy analysis and planning in addition to the usual tools now common in practice. Energy justice demands that we evolve new business models and regulatory paradigms that promote inclusive and transparent planning processes, diverse resource portfolios, and energy policies that respect the future. The community of energy planners needs to shift from imposing negative externalities on marginalized populations and future generations to endorsing those energy systems that focus on bettering social welfare and minimizing environmental damage.

Ultimately, energy analysis and planning needs to be guided by energy justice principles. We must appreciate that people deserve sufficient energy resources to meet their daily needs, and that the cost of energy does not become a financial burden. Due process and human rights must be respected in the production and use of energy, and all people should have access to high quality information about energy and the environment and fair, transparent, and accountable forms of energy decision-making.

Energy resources ought to be depleted with consideration for savings, community development, and precaution, and we must recognize the equitable distribution of energy services (and costs) among current and future generations, and acknowledge that all people have a right to fairly access energy services. All actors have a responsibility to protect the natural environment and minimize energy-related environmental threats. Critically, energy justice requires us to *resist* unjust energy projects or policies, and to appreciate the complex *intersectionality* of justice principles and concerns. The dominant model of energy policy—business as usual, what we’re doing now—can only be endorsed uncritically if one has extremely limited criteria for endorsement.

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